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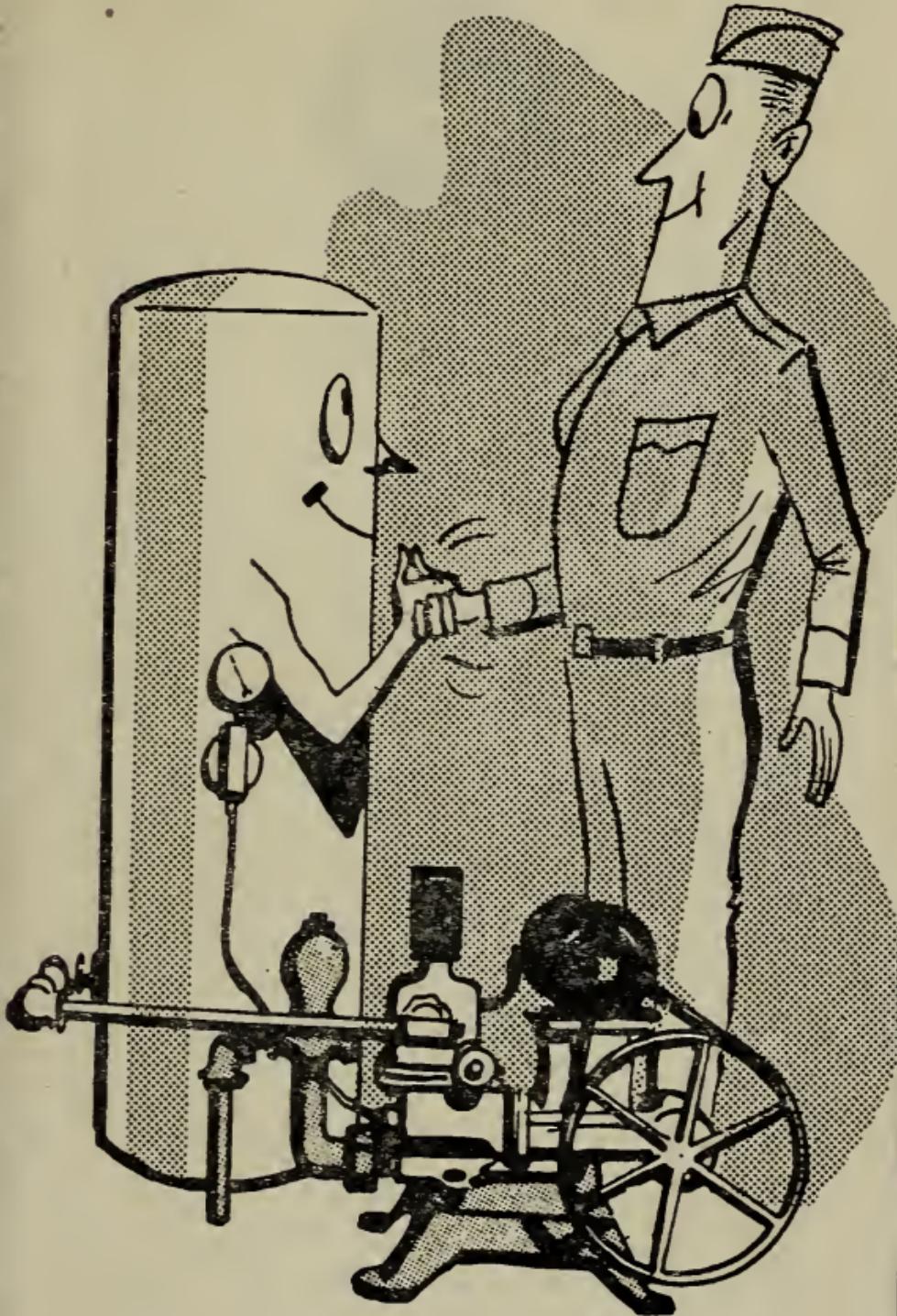
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KEEP YOUR

**ELECTRIC
WATER SYSTEM**

IN SERVICE



**U. S. DEPARTMENT OF AGRICULTURE
RURAL ELECTRIFICATION ADMINISTRATION**

PA-171



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THE MANUFACTURER of your electric water system built it to give you many years of good, dependable service. If you give it the best of care, that is what you may expect. You may have to call in a serviceman for minor repairs at times. That is to be expected, even when you have good equipment and take good care of it. But without careful maintenance, you can expect frequent breakdowns which will be both costly and troublesome.

Careful maintenance of your water system is important at all times, but it is doubly so during the present national emergency. Repair parts may be hard to get. Expert service men may not be available when needed. A replacement for your present water system may not be available. Repair parts and replacement systems use critical materials and labor that are needed in defense activities. And, most important, your water system should be working when you need water on your farm.

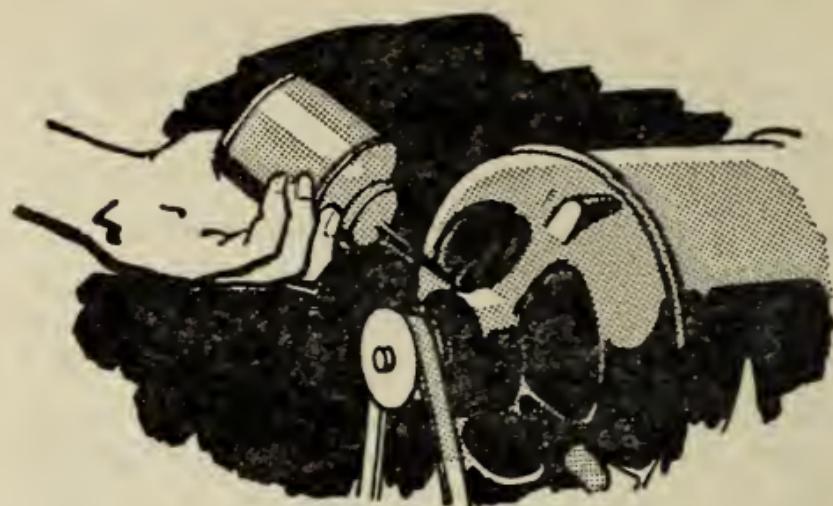
There are several types and styles of electric water systems, each particularly suited to certain situations. Within any one style or type, different manufacturers vary the construction enough so that different maintenance may be required. For this reason, it is impossible to give complete directions for your system here.

You need the instruction leaflet or booklet that the manufacturer prepared for your system. If you do not have these instructions, try to get them from your dealer or directly from the manufacturer. Remember that you will have to give all the identifying names and numbers on the system if the dealer or manufacturer is to know which system you have and be able to give you the right instructions.

If you do not have and are unable to get the manufacturer's instructions for your own system, the following suggestions will be helpful:

Lubrication.—Every electric water system requires lubrication in the motor and in the pump. Some motors have bearings that are packed with grease at the factory and require no lubrication by the owner. If, after several years' service, the bearings in the motors become worn and loose, they must be replaced

by an expert serviceman with new bearings which are also packed with grease at the factory. Other motors have bearings that require periodic oiling by the owner. The frequency of oiling and the amount of oil to be used each time depend on the way the bearings are made. Some motors should be oiled twice a year, others once a year. Lubrication is necessary, but over-oiling a motor may do more damage than under-oiling.



The correct ways of lubricating the various pumps differ even more than the correct ways of lubricating the motors. Almost all pumps have some internal working parts that are lubricated by the water passing through them. Many jet pumps and some rotary pumps have all of the parts lubricated by water, and no oil or grease should be used on them. All pumps should have water in them whenever they are run, in order that they will have this needed lubrication. Except for jet pumps, most pumps have some parts that are lubricated by oil or grease. Some have oil reservoirs that certain parts pass through and carry or splash the oil to other parts. The oil in these reservoirs needs to be changed once or twice a year. If water gets into them, it may cause severe damage to parts.

Stuffing-box adjustment.—All pumps have a rod or shaft that connects the motor or driving mechanism to the actual pumping parts. This shaft either rotates or moves back and forth, and it passes through a water seal which keeps the water from leaking out of the pumping parts.

On all cylinder-type pumps, this water seal is a stuffing box which contains a special packing material to prevent leaks. Water

lubricates the rod as it moves back and forth through the packing. The cap on the end of the stuffing box is an adjustment for tightening the packing. If the packing is too tight, the rod will not be lubricated and will wear rapidly. If it is too loose, there will be excessive leakage. When it is properly adjusted, a few drops of water a minute will leak through it. Proper adjustment requires that it be turned a little tighter than is possible with the fingers. And as a matter of routine, a little tightening may be necessary once or twice a year. When it has been tightened to the point where excessive leakage cannot be prevented without hard turning with a wrench or pliers, the old packing should be removed and replaced by new.

On pumps where the shaft rotates instead of moving back and forth, the seal may be either a stuffing box or a device known as a rotary seal. If your pump has a stuffing box, its adjustment is exactly the same as for pumps with a rod that moves back and forth. A rotary seal requires no adjustment and there should be no leakage through it beyond, possibly, a slight dampness. If a rotary seal leaks, the whole seal must be replaced. All rotary seals are water lubricated. It is even more important that pumps with them be filled with water before they are run than it is with pumps having stuffing boxes.

Safety pressure releases.—All electric water system pumps, except single-stage centrifugal pumps (commonly used as centrifugal jet combinations), need safety pressure relief valves. Of course, you hope nothing will ever go wrong with the automatic switch which would allow the pump to develop dan-



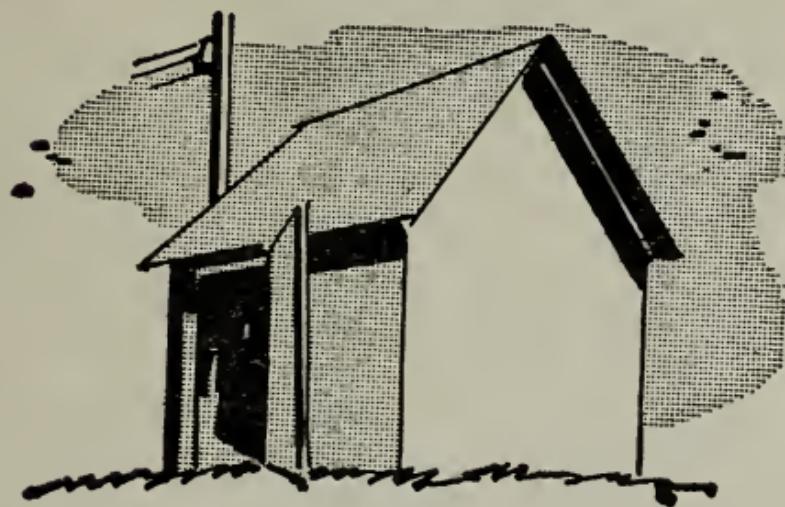
gerous pressures, but the relief valve is put on the system to make sure there will be no explosion if the switch should develop a fault. The safety release probably never will have to work. Most of them never do because the automatic switches are very reliable. After the safety release has stood for years without moving, sediment will have collected in it, and water may have caused some parts to corrode and stick. This condition may keep it from working when it is needed. Therefore, it is good practice to remove and clean the safety pressure release once a year. Then you know that it is ready if it should be needed.

Belt tension.—Many water system pumps are driven by V-belts. If a belt is too loose, it will slip. If it is too tight, there will be excessive wear on bearings in the pump and in the motor, and the life of the belt will be shortened. The correct tension is about the same as that for a fan belt on an automobile engine. Badly worn belts should be replaced even though they have not broken.

Air-volume control.—The pressure tank on your water system contains both water and air. For proper operation, the relative amounts of water and air must stay constant. Too little air results in the pump starting when only a little water is drawn and stopping sooner than it should after all faucets are closed. Too much air results in water "spitting" vigorously from faucets. These two conditions are known respectively as the tank being "water-logged" and "air-bound." The air volume control prevents both conditions; it is not working properly if it fails to do so. There are too many kinds of air volume controls to be described here. Many of them have small valves and small pinholes that become clogged with rust or sediment. As they are inexpensive devices, it is often good practice to replace them with new ones if they stop working. Allowing the system to continue operation with a water-logged tank causes excessive wear on the motor and on the automatic switch.

Motors.—The motors on water systems need much the same care as motors on other types of equipment. If they are to continue

to work right, they must be clean, dry, properly lubricated, and fed electricity through good wiring. Pump pits, which are usually damp, are poor places for electric motors and electric wiring. At least once a year, dirt should be wiped from the outside of the motor, and all the ventilation openings cleaned out. It is good practice to disassemble the motor and clean the internal parts. Thousands of electric water system motors burn out every year because of poor electric wiring to them.



Weather protection.—Electric water systems in general use are not built for long exposure to outside weather. Rain causes rusting of many parts and possibly severe damage to motors. Wind blows dust into motors, bearings, and oil reservoirs. Hot sunshine dries out gaskets, damages motor wiring, and causes deterioration of other parts on many systems. Usually the best protection is a well-built pump house. It will repay its cost in increased life of the system, freedom from freezing damage, and freedom from troublesome interruptions in service.



The national mobilization program is going to require maximum use of materials, equipment, and manpower on American farms. Electricity can be used to replace manpower lost to the Armed Forces or to defense production. Electrical equipment will have to be cared for well, and used wisely. The following leaflets contain useful information to help you make the best use of your electric water system:

Planning the Electric Water System and Plumbing for Your Farmstead, Miscellaneous Publication No. 674.

Water . . . When and Where Your Garden Needs It.

The Small Portable Motor.

Make This Motor Table!

Selecting the Right Water Pump.

If you want copies of any of these leaflets, write REA, U. S. Department of Agriculture, Washington 25, D. C.